

**ABSTRACT OF THE DISCLOSURE**

Compositions of matter and methods for enhancing bioassay performance are disclosed. More particularly, the composition of matter comprises a molecularly compact polymer-ligand conjugate capable of self-orienting on a surface to improve the orientation of the ligand/receptor binding domains within the bioassay at the nanoscopic level. In a preferred embodiment, the molecularly compact polymer comprises a dendrimer polymer such as a fifth generation polyamidoamine dendrimer having exterior surface hydroxyl and amine functional groups, and the ligand/receptor comprises an antibody or Fab.